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| EXAMINER | |
|---|---|
| NELSON, MICHAEL E | |
| ART UNIT | PAPER NUMBER |
| 1794 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/531,780 | SCHAFER ET AL. | |
| | Examiner | Art Unit | |
| | MICHAEL E. NELSON | 1794 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *3-8,10,11,13-18 and 21-25* is/are pending in the application.

4a) Of the above claim(s) *3-8,13, 18, 21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,11,14-17 and 22-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Status of Claims*

1. In response to Applicant's reply dated 06/23/2008, claims 3-8, 10-11, 13-18, 21-25 are pending. Claims 13-14, 16-17 have been amended. Claims 22-25 are new. Claims 3-8, 13, 18, 21 are withdrawn from further consideration as being drawn to a non-elected species.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

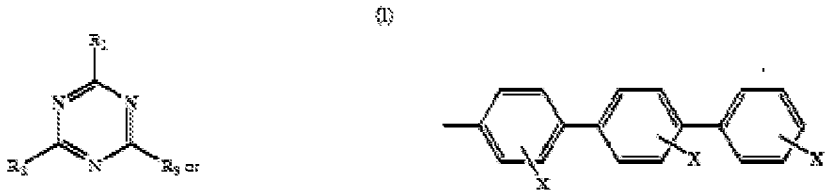
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 10-11, 14-17, and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fink et al. (6,352,791) in view of Thelakkat et al. (Polymers for Advanced Technologies, vol. 9, pp. 429-442, 1998) and Schomaker et al. (Journal of Organic Chemistry, vol. 66, no. 21, pp. 7125-7128, 2001).

4. Concerning claims 10-11 and 16-17, 22-23, Fink et al. describe Organic electroluminescent devices comprising at least two electrodes (an anode and cathode) with a plurality of layers between the two electrodes, at least one of which comprises the triazine compounds discussed below. (Fink et al. claims 1 and 2).

5. Concerning claims 14-15, and 24-25 Fink et al. describe electron transport materials for organic electroluminescent devices based on a triazine core structure.

Fink describes mono-triazine compounds with the following structure, where each of $R_1$-$R_3$ is defined by the second structure below. (column 2)



6. Fink et al. are silent on the use of pyrimidine compounds as the electron transport compounds.

7. Thelakkat et al. reviews Low molecular weight and polymeric heterocyclics as electron transport/Hole-blocking materials in organic Light-emitting diodes. Thelakkat et al. discloses that candidate for electron transporting materials are nitrogen/oxygen containing $\pi$-deficient heterocyclics including pyrimidines and triazines (page 430, column 2, and Figure 2, page 431). Tri-aryl substituted pyrimidines are synthetically readily available using standard methods described by Schomaker et al., using Suzuki coupling reactions (see Scheme 2, page 7126).

8. Concerning claims 14-15 and 24-25 given the structures described by Fink et al. for electron transporting materials for organic electroluminescent devices, with the teaching by Thelakkat et al. that pyrimidines, as well as triazines function as electron transporting materials in organic electroluminescent devices, and standard methods for producing tri-aryl substituted pyrimidines by Suzuki coupling as described by Schomaker et al., it would have been obvious to one of ordinary skill in the art to synthesize the analogous pyrimidine compound, and predict that it would function as an electron transporting material in an organic electroluminescent device.

9. Concerning claims 10-11 and 16-17, 22-23, Fink et al. describe Organic electroluminescent devices discussed above. Given the teaching by Thelakkat et al. on the use of pyrimidine compounds as well as triazine compounds as electron transporting materials in organic electroluminescent device, it would have been obvious to one of ordinary skill in the art to use the pyrimidine compounds in an organic electroluminescent device, and predict that they would function as electron transporting materials, and that the resulting electroluminescent devices would function in the same manner as electron transporting materials.

10.

***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 10-12, 14-17, and 22-25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 9-10 of copending Application No. 11/587691. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims encompass the same specific embodiment described in the current application, specifically compounds and electroluminescent devices comprising compound having the formula discussed above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 10-12, 14-17, and 22-25 are directed to an invention not patentably distinct from claims 1 and 9-10 of commonly assigned Application No. 11/587691. See discussion above.

13. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned Application No. 11/587691, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

### *Response to Arguments*

14. Claim objections are withdrawn in light of Applicant's amendments.

15. Applicant argues that the use of pyrimidine heterocycles in electron transporting materials for organic electroluminescent devices is not obvious to one of ordinary skill in the art when presented with the fact that triazine containing compounds are well known electron transport materials (Fink et al.) in electroluminescent devices, and references which show that pyrimidines and triazines are suitable for use in electron transporting materials for organic electroluminescent devices (Thelakkat). Applicant argues that Thelakkat mentions pyrimidine compounds only once. However, the fact remains that Thelakkat explicitly discloses pyrimidine as well as triazine (as disclosed by Fink et al.) as electron transporting material. Further, while Thelakkat only generically discloses pyrimidine structures, Thelakkat alone is not being used to teach the presently claimed compound. Rather it is the Examiner's position based on the teaching of Thelakkat that it would be obvious to produce the presently claimed compound based on the combination of Fink et al. with Thelakkat. Applicant states that because Thelakkat does not present examples of pyrimidine containing materials that they would not function comparatively to the triazine and other heterocyclic structures described. However, it is

established that "Applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others." In re Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). Just as with patent references, non-patent references must also reflect the whole teaching of the reference. While Thelakkat does not disclose specific examples of pyrimidine containing compounds as electron transporting/hole blocking materials, they clearly show that pyrimidine rings are $\pi$-electron deficient, similar to other heterocycles, and would therefore be predicted to function as electron transporting compounds, similar to the analogous triazine materials.

16. Fink et al. teaches triazine structures as electron transport materials, including compounds very similar in structure to the compounds claimed by Applicant. As stated in the MPEP 2144.08:

> A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." In re Payne, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979).

17. In this case, the structures differ by a single nitrogen in the core ring structure. The use of $\pi$-electron deficient heterocycles in electron transporting materials is clearly taught by Thelakkat et al., including specifically both pyridines and triazines.

18. It is established that : "If the claimed invention and the structurally similar prior art species share any useful property, that will generally be sufficient to motivate an artisan of ordinary skill to make the claimed species" and "In fact, similar properties may

normally be presumed when compounds are very close in structure. *Dillon*, 919 F.2d at 693, 696, 16 USPQ2d at 1901, 1904" and "thus, evidence of similar properties or evidence of any useful properties disclosed in the prior art that would be expected to be shared by the claimed invention weighs in favor of a conclusion that the claimed invention would have been obvious." *Dillon*, 919 F.2d at 697-98, 16 USPQ2d at 1905; *In re Wilder*, 563 F.2d 457, 461, 195 USPQ 426, 430 (CCPA 1977); *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

19. Given these facts, it would have been reasonable to one of ordinary skill to conclude that pyrimidine analogs of triazine compounds would be expected to function as electron transporting materials in electroluminescent devices. Therefore, absent an indication of an unexpected difference between the claimed pyrimidine materials and the corresponding triazine analogs, the claims are held to be non-patentable.

## ***Conclusion***

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL E. NELSON whose telephone number is (571)270-3453. The examiner can normally be reached on M-F 7:30am-5:00pm EST (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael E. Nelson
Examiner
Art Unit 1794

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